

ecuadorensis, the young branchlets, petioles, and pedicels are sparsely and caducously fine-setose; the external bracts are very sparsely fine-setose marginally inside. In floral characters, the two subspecies are the same, with calycine and corollar hairs caducously gland-tipped. The typical subspecies has now also been collected in Ecuador at Canelos, Napo-Pastaza (Harling 3309, S). *B. hispida* Mg. must be rather similar to *B. bracteata*, but differs in the hispid hypanthia and setulose ovary apices.

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MATERIALS TOWARD A MONOGRAPH OF THE GENUS VERBENA. XXVIII

Harold N. Moldenke

VERBENA URTICIFOLIA L.

Additional bibliography: Moldenke, *Phytologia* 11: 315, 316, & 326--357. 1954.

Additional citations: ILLINOIS: Winnebago Co.: E. W. Fell 51324 (Il--38585); Fell & Fell F.46531 (Il--20632); Fuller & Haime 271fa (Il--15812), 2534h (Il--15809). Woodford Co.: V. H. Chase 9991 (Ur, Ur, Ur, Ur); G. N. Jones 14299 (Ur). County undetermined: Collector undesignated s.n. [Boewe] (Il--15804); Vasey 3 (Il--16007). INDIANA: Allen Co.: C. C. Deam 1362 (Dm). Boone Co.: Friesner 16989 (Bt--62551); S. McCoy 5293 (Bt--51739); A. R. Moldenke 805 (Lw), 806 (Lw). Cass Co.: C. C. Deam 51078 (Dm). Clark Co.: C. C. Deam 23792 (Dm). Clay Co.: S. M. Deam s.n. [C. C. Deam 13868] (Dm). Clinton Co.: Ek s.n. [8-27-1941] (Bt--57380). Crawford Co.: Friesner 11815 (Bt--36886). Decatur Co.: C. C. Deam 58272 (N). Elkhart Co.: C. C. Deam 50429 (Dm). Franklin Co.: Friesner 12448 (Bt--42140); S. McCoy 4172 (Dp--4663). Fulton Co.: Friesner 23098 (Ca--803863, Ok, S, St). Gibson Co.: Schneck s.n. [July 1888] (Dm). Greene Co.: Friesner 22932 (B, N). Hamilton Co.: Friesner 6044 (Bt--13456); A. R. Moldenke 21912 (Lw). Hancock Co.: Friesner 18618 (N). Harrison Co.: C. C. Deam 41511 (Dm); G. Een s.n. [16.7.1950] (S). Hendricks Co.: Friesner 17081 (Bt--61356). Henry Co.: H. N. Moldenke 21911 (Lw). Howard Co.: C. C. Deam 58234 (N); Ek s.n. [7-24-1935] (Bt--42527), s.n. [7-29-1936] (Bt--42528); Friesner 11674 (Bt--37459). Jasper Co.: C. C. Deam 42039 (Dm); Welch 202 (Dp, Ur, Ur). Jefferson Co.: M. S. Coulter s.n. [Hanover, 1873] (Pu); C. C. Deam 47453 (Dm). Jennings Co.: C. C. Deam 58280 (N, Ok); S. McCoy 417 (Dp--4675). Knox Co.: C. C. Deam 51479 (Dm). Kosciusko Co.: Friesner 12664 (Bt--41724). Lagrange Co.: C. C. Deam 51033 (Dm); Friesner 15639 (Bt--55058). Lake Co.: Lansing 2806 (W--753090). Laporte Co.: C. C. Deam 43723 (Dm); Friesner 14991 (Bt--52373); W. H.

Rhoades s.n. [near Westville, July 1934; H. N. Moldenke 17075] (Br, Bt, N, St). Lawrence Co.: Wible 83 (In--4605); Wynn 90 (Au, Gu--27690). Madison Co.: Friesner 17407 (Bt--62513); S. McCoy 2236 (Dp--13911); A. R. Moldenke 803 (Lw, Ut). Marion Co.: H. H. Bartlett s.n. [July 22, 1903] (Mi); Friesner s.n. [7-15-25] (Bt--2477); W. H. Rhoades s.n. [Indianapolis] (Hs). Marshall Co.: Evermann 686 (W--357535); Scovell & Clark 686 [54] (Du--9537). Miami Co.: Ek s.n. [8-16-1936] (Bt--42526). Monroe Co.: Gullion s.n. [Ellettsville] (In--3316); Lewis & Brown s.n. [Bloomington] (Au); Lipps s.n. [July 3, 1941] (Ok); Welch & Price 145 (In). Montgomery Co.: Friesner 3133 (Bt--6964). Morgan Co.: Weatherwax s.n. (In--922). Newton Co.: C. C. Deam 50597 (Dm); M. McKee 1345 (Dp). Noble Co.: C. C. Deam 34615 (Dm); Friesner 12634 (Bt--44405). Ohio Co.: Friesner 12153 (Bt--43914). Owen Co.: Friesner 4565 (Bt--12051). Parke Co.: W. H. Duncan 180 (H--7807). Pike Co.: C. C. Deam 52667 (Dm). Posey Co.: C. C. Deam 35153 (Dm). Putnam Co.: Grimes 736 (Dp); McDougal s.n. [7-29-89] (Dp); Yunker 1264 (Dp). Ripley Co.: Friesner 12364 (Bt--43922). Shelby Co.: S. M. Deam s.n. [C. C. Deam 13708] (Dm); Friesner 17104 (Bt--61983). Steuben Co.: C. C. Deam 20885 (Dm), 58416 (H--43335, N). Sullivan Co.: C. C. Deam 18226 (Dm). Tippecanoe Co.: Ek s.n. [10-1-1942] (Bt--64007). Tipton Co.: C. C. Deam 13621 (Dm). Union Co.: C. C. Deam 47283 (Dm), 58171 (N). Wabash Co.: Friesner 16015 (Bt--53182). Warren Co.: C. C. Deam 49625 (Dm). Wayne Co.: "M. B." 155 (Ea); Creek 158 (Ea); Frenning 3 (Ea); Hudson 165 (Ea); L. J. King 1587 (Ea), 1762 (Ea), 2571 (Ea); Knipe s.n. (In--2514). Wells Co.: C. C. Deam s.n. [Sept. 13, 1896] (Dm). White Co.: C. C. Deam 58210 (N). County undetermined: Friesner 15826 (Kr). IOWA: Adair Co.: A. R. Moldenke 936 (Lw). Allamakee Co.: Tolstead s.n. [July 20, 1933] (Ca--882838), s.n. [July 25, 1933] (Io--144283). Boone Co.: Macklin & Pammel s.n. [Aug. 1912] (Io--52727); Pammel & Henning s.n. [Aug. 31, 1930] (St--9272). Cedar Co.: Fay 1368 (Vi). Clayton Co.: Melhus & Dietz s.n. [McGregor, Aug. 1933] (Io--141093); A. R. Moldenke 990 (Lw); L. H. Pammel s.n. [St. Olaf, Aug. 10, 1924] (Io--115804). Decatur Co.: J. P. Anderson s.n. [July 13, 1903] (Io--52110). Delaware Co.: Bode s.n. [Aug. 1919] (Io--99818). Des Moines Co.: L. H. Pammel 737 (Io--118880), 960, in part (Io--119554), s.n. [Crapo Park, Sept. 8, 1930] (Io--136311). Emmet Co.: Cratty s.n. [1883] (Ob--50843), s.n. [Armstrong, June 24, 1897] (Io--15335). Fayette Co.: Fink 264 [Aug. 1, 1894] (W--214890), 264 [Aug. 29, 1894] (W--214890), s.n. [August 1, 1894] (Io--31576). Fremont Co.: L. H. Pammel 732 (Io--119321). Hamilton Co.: L. H. Pammel s.n. [Stratford, 8-1-1913] (Io--77202). Hardin Co.: Pammel & Hagge s.n. [Eldora, Oct.

13, 1928] (Io--134449). Henry Co.: Boley 688 (Se--31487). Iowa Co.: A. R. Moldenke 976 (Lw). Johnson Co.: P. Barker s.n. [Iowa City, 7-27-29] (Au); Huang 2466 (Lb--54992). Jones Co.: L. H. Pammel s.n. [Oxford Junction, July 25, 1919] (Io--97272). Lee Co.: Fults 1500 (Io--138821). Linn Co.: A. R. Moldenke 982 (Lw). Louisa Co.: L. H. Pammel s.n. [Fredonia, June 1927] (Io--129477), s.n. [Fredonia, Aug. 1927] (St--9280). Madison Co.: A. R. Moldenke 939 (Lw). Mahaska Co.: Augustine 412 (Ok, Ok); A. R. Moldenke 959 (Lw). Marion Co.: A. R. Moldenke 955 (Lw). Mills Co.: A. R. Moldenke 920 (Lw). Mitchell Co.: Tittle 31 (Io--74179). Muscatine Co.: Pammel, Kelso, & Harlan s.n. [Jul. 20, 1919] (Io--95043). Palo Alto Co.: L. H. Pammel s.n. [Lost Island Lake, Jul. 15, 1920] (Io--98810). Polk Co.: L. H. Pammel 4142 (Io--32536); Pammel & Forbes s.n. [Bloomfield, Jul. 25, '27] (Io--129942); Pammel, Frankel, & Rieman 986 (Io--119680). Pottawattomie Co.: O. M. Clark 6080 (B); A. R. Moldenke 931 (Lw). Poweshiek Co.: M. E. Jones s.n. [Grinnell, August 1875] (Du--151781); A. R. Moldenke 964 (Lw). Scott Co.: Suksdorf s.n. [June 29, 1874] (Pl--138358), s.n. [July 28, 1874] (Pl--138358). Story Co.: Botanical Seminar 7 (Io--81132); W. P. Caldwell 18 (Au--122794); J. R. Campbell 67 (Io--50252); P. Clayton 147 (Io--84562); Cratty s.n. [Ames, Jul. 1925] (Io--117327); A. S. Hitchcock s.n. [Ames, 1889] (Io--15334); Jeffs s.n. [Ames, July 4, 1907] (Ok--10369); Pammel & Ball s.n. [Ames, Aug. 21, 1897] (Io--15333). Tama Co.: Fisk s.n. [Jul. 1926] (Io--126759). Union Co.: T. L. Andrews s.n. [Creston] (Io--22924). Wapello Co.: Cratty s.n. [Ottumwa, Jul. 15, 1927] (Io--129751). Warren Co.: A. R. Moldenke 945 (Lw); L. H. Pammel s.n. [Norwalk, Sept. 9, '27] (Io--130062). Webster Co.: Blumer 4441 (Io--107739); Paige s.n. [Fort Dodge] (Io--131045). Woodbury Co.: L. H. Pammel s.n. [Sioux City, July 7, 1919] (Io--97278). County undetermined: Somes 3488 [Butler's Landing] (W--672271). KENTUCKY: Breckinridge Co.: R. Runyon 1260 (W--1438382). Edmonson Co.: Lix 478 (N). Fayette Co.: F. T. McFarland s.n. [Lexington, Sep. 30, 1915] (Ky--1780). Harlan Co.: F. E. Lloyd s.n. [July 25, 1888] (Cm). Henderson Co.: A. R. Moldenke 105 (Fg). Hopkins Co.: A. R. Moldenke 108 (Fg). Jessamine Co.: F. T. McFarland 92 (Ky, S, Vi). Madison Co.: Wharton 835 (N). Nelson Co.: Agnes s.n. [July 4, 1933] (I). Scott Co.: Singer 308 (W--1465820). Union Co.: Shacklette 504 (Ky). Webster Co.: A. R. Moldenke 106 (Fg). TENNESSEE: Davidson Co.: Ainslie s.n. [Nashville, July 2, 1914] (Ka--66476); Gattinger s.n. [about Nashville] (Du--91132). Hamilton Co.: Moldenke & Woods 501 (S). Henry Co.: A. R. Moldenke 111 (Fg). Jackson Co.: A. R. Moldenke 56 [H. N. Moldenke 21781] (Bm). Knox Co.: Ruth 788 (N). Lewis Co.: C. B. King 176 (Au). Marion Co.: A. R. Moldenke 775 (S).

McMinn Co.: A. R. Moldenke 778 (B, S); Moldenke & Woods 500 (S).
 Monroe Co.: A. R. Moldenke 779 (B, S). Montgomery Co.: T. L. Andrews 146 (Io--83617). Obion Co.: Jennings & Jennings s.n. [Reelfoot Lake, 1924] (Cm, Cm, Cm). Sevier Co.: A. R. Moldenke 54 [H. N. Moldenke 21778] (Bm). Shelby Co.: Demaree 33199 (Sm). Tipton Co.: Byars s.n. [Covington, Aug. 14, 1898] (W--330912). Wayne Co.: McDougall 1060 (W--1925243). County undetermined: W. H. Camp 1806 [Smoky Mts. Nat. Park] (N), 1807 [Smoky Mts. Nat. Park] (N).
 MICHIGAN: Allegan Co.: C. H. Kauffman s.n. [New Richmond, Aug. 11, 1910] (Mi). Berrien Co.: Billington s.n. [July 29, 1919] (Mi). Gratiot Co.: C. A. Davis s.n. [Alma, Aug. 8, '89] (Mi, Mi), s.n. [July 29, '92] (Pl--22604). Ingham Co.: L. H. Bailey s.n. [Lansing, Aug. 4, 1885] (Ba); Collector undesignated s.n. [Lansing, 8/15/1867] (Lb--27623); E. B. Lake s.n. [8-7-88] (Or--8874); Yunker 529 (Or--13548, Ur). Ionia Co.: C. F. Wheeler s.n. [Hubbardston] (Mi). Isabella Co.: A. R. Moldenke 1032 (Lw, Ut). Kent Co.: H. M. Bailey s.n. [Grand Rapids, July 29, 1892] (Mi, Mi); Daniels s.n. [Alto, June 1899] (Lb--27622). Livingston Co.: Hamerstrom 197 (Mi). Menominee Co.: Grassl 2702 (N). Montcalm Co.: A. R. Moldenke 1034 (Lw). Ontonagon Co.: E. G. Voss 7769 (Mi). Saint Clair Co.: C. K. Dodge s.n. [8-28-92] (Mi), s.n. [Aug. 15, 1910] (Mi). Washtenaw Co.: E. C. Almendinger s.n. [Ann Arbor, July 18, 1860] (Mi); K. C. Davis 108 (Pl--22572); Harrington s.n. [Ann Arbor, July 1870] (Mi); N. A. Harvey s.n. [Ypsi, Aug. 16, 1916] (Mi); F. J. Hermann 9104 (N); C. D. La Rue s.n. [Aug. 6, 1915] (Mi), s.n. [Aug. 7, 1915] (Mi); C. L. Lundell 8315 (Ld); Whited 2108 (Or--12381). Wayne Co.: Farwell 1289 (C); Foote s.n. [Detroit, July 10, 1870] (Mi); H. H. Rusby s.n. [Detroit, Aug. 1884] (Bz--23791, Bz--23792, Mi, Se--14946). WISCONSIN: Bayfield Co.: Shaughnessy & Shaughnessy s.n. [Oct. 3, 1959] (Ws, Ws); Weber, Ugent, & Zimmerman s.n. [September 3, 1959] (Ws). Buffalo Co.: H. H. Smith 7180 (B). Columbia Co.: Botany 162 class s.n. [Sept. 28, 1935] (Ws); Fernholz s.n. [Aug. 15, 1930] (Ws); Koeppen 131 (Ws); H. L. Russell s.n. [Poynette, Aug. 20, '86] (Ws). Crawford Co.: Fassett 9791 (Um--186, Ws); A. R. Moldenke 994 (Lw); H. H. Smith 7520 (B); C. Wilson s.n. [Sept. 18, 1960] (Ws). Dane Co.: C. C. Albers 33011 (Au), 33012 (Au); W. H. Chase s.n. [8/10/1877] (Ws); T. J. Hale s.n. [Madison] (Ws); Hale & McCabe s.n. [27 July 1945] (Ws); Heddle 2T266 (Ws); A. R. Moldenke 1011 (Lw, Ut); R. C. Monroe s.n. [October 10, 1959] (Ws); Rickett s.n. [Madison, August 1, 1926] (Lb--27621); A. B. Seymour 1061 (H--107711, Ws); Stroesenreuther s.n. [Oct. 5, 1959] (Ws). Dodge Co.: A. R. Moldenke 1013 (Lw). Dunn Co.: Goessel 8956 (B); Weinzirl s.n. [Aug. 7, '92] (Ws). Grant Co.: Blazkovec s.n. [June

29, 1959] (Ws); Fassett 12528 (Ws); Iltis, Long, & Rudolph 13793 (Ws); Iltis & Salamun 10058 (Ws, Ws); A. R. Moldenke 998 (Lw); L. H. Pammel 1053 (Io--119695); Pammel & Johnson s.n. [Muscoda, Aug. 17, 1928] (Io--134359, St--9273); H. H. Smith 7681 (B, Ws); Wunderlin s.n. [Aug. 14, 1960] (Ws). Green Co.: E. E. Chambers 27 (Ws), 39 (Ws). Green Lake Co.: Kunz s.n. [Aug. 25, 1929] (Ws). Iowa Co.: A. R. Moldenke 1002 (Lw, Ut). Juneau Co.: Bramschreiber s.n. [July 15, 1959] (Ws). LaCrosse Co.: Hartley 1623 (Ws); A. M. Peterson 562 (Ws). Lafayette Co.: Arnot s.n. [July 26, 1956] (Ws); Iltis 9561 (Ws); Shinners 2357 (N, Ws). Milwaukee Co.: J. S. Douglas s.n. (Je--3165); Ramaley 344 (Bl--42343); Shinners 1479 (Ws); Strong s.n. [Wauwatosa, July 28, 1891] (Mi). Pierce Co.: Fassett 5631 (Ws). Richland Co.: Iltis & Salamun 9942 (Ws); Wills s.n. [Sept. 25, 1957] (Ws), s.n. [July 27, 1959] (Ws). Rock Co.: E. W. Fell 57-802 (Ws); Skavlem s.n. [Jonesville, July 23, '89] (Ws); J. Wickham 15 (Ws). Vernon Co.: Fassett 20235 (Ws); Pammel & King s.n. [Portland, 8-26-'01] (Io--32602); H. H. Smith 7258 (B, Ws). Walworth Co.: Almon s.n. [July 23, 1926] (Um--204); N. Hollister 137 (Um--196); Kleeberger s.n. [Whitewater, 8-1-1877] (Gg--31437). Waukesha Co.: Cull 236 (Ws); Schulte s.n. [Sept. 1959] (Ws). Waupaca Co.: L. Hansen s.n. [Sept. 26, '60] (Ws); Rill s.n. [July 16, 1959] (Ws). MINNESOTA: Hennepin Co.: F. H. Burglehaus 8467 (Se--14947); E. T. Harper III (Pl--66548); J. H. Sandberg s.n. [July 1890] (Ms). Rice Co.: Goldsmith 119 (N). NORTH DAKOTA: Stutsman Co.: Lunell 869 (Ur). SOUTH DAKOTA: Day Co.: J. F. Brenckle s.n. [July 22, 1938] (B). Minnehaha Co.: P. Johnson 33 (Se--77271). KANSAS: Anderson Co.: A. S. Hitchcock s.n. [Anderson Co., July 1896] (Ka); R. L. McGregor 13169 (Lw). Atchison Co.: A. S. Hitchcock s.n. [Atchison Co., Oct. 1896] (Ka); Horr & McGregor E.531 (Au--122795, B, Ca--44813, No--15591, Ok, Rf, S, St, Tl, Vi, W--2031362), s.n. [10/4/47] (Lw); Jeanette 165 (N); A. R. Moldenke 909 (Lw). Barber Co.: Kellerman s.n. [Medicine Lodge, July 15, 1888] (Ka); R. L. McGregor 14580 (Lw), 14717 (Lw). Barton Co.: A. S. Hitchcock s.n. [Barton Co., August 1895] (Ka). Bourbon Co.: Kellerman s.n. [Fort Scott, July 15, 1887] (Ka); Z. D. Thompson 50 (Lw). Brown Co.: Clothier & Whitford s.n. [July 29, 1897] (Ka); F. Garner s.n. [Aug. 1925] (Ka--72014, Lb--27626); R. L. McGregor 17048 (Lw); A. R. Moldenke 914 (Lw). Butler Co.: A. S. Hitchcock s.n. [White Water, July 1892] (Ka). Chase Co.: A. S. Hitchcock s.n. [Chase Co., August 1895] (Ka). Chautauqua Co.: A. S. Hitchcock s.n. [Chautauqua Co., Aug. 8, 1896] (Ka); W. H. Horr s.n. [July 5, 1930] (Lw). Cherokee Co.: A. S. Hitchcock s.n. [Cherokee Co., May 1896] (Ka); A. A. Jacobs 21 (Ka--74034), 50 (N), 106 (Ka--74090); E. W. Lathrop 2758 (Lw); R. L. McGregor 15780 (Lw). Cloud Co.:

Carleton s.n. [July 12, 1888] (Ka); S. V. Fraser 438 (Ka--78941);
A. S. Hitchcock s.n. [Concordia, June 17, 1897] (Ka). Coffey Co.:
Wimpey s.n. [Burlington, July 1896] (Ka). Cowley Co.: Clothier &
Whitford s.n. [Aug. 22, 1897] (Ka); A. R. Moldenke 885 (Lw); Ryd-
berg & Imler 482 (Lw, N). Crawford Co.: Clothier & Whitford s.n.
 [Aug. 12, 1897] (Ka). Dickinson Co.: A. S. Hitchcock s.n. [Dick-
 inson Co., June 1896] (Ka). Doniphan Co.: Clothier & Whitford s.
n. [July 31, 1897] (Ka); F. C. Gates 20889 (Ka--89686); R. L. Mc
Gregor 15990 (Hi--195443, Lw); F. Schultz s.n. [Wathena, Oct. 4,
 1925] (Ka--73704). Douglas Co.: Horr & McGregor E.531 (Ur); Kel-
lerman s.n. [Lawrence, July 20, 1887] (Ka); R. L. McGregor 182
 (Lw); J. D. Poindexter 9 (Lw). Elk Co.: Clothier & Whitford s.n.
 [Aug. 20 & 21, 1897] (Ka). Franklin Co.: Hetzer 419 (Lw); A. S.
Hitchcock s.n. [Franklin Co., July 1896] (Ka). Geary Co.: F. C.
Gates 18768 (Ka--87795); A. S. Hitchcock s.n. [Geary Co., June
 1896] (Ka). Graham Co.: A. S. Hitchcock s.n. [Graham Co., June 20,
 1897] (Ka). Greenwood Co.: A. S. Hitchcock s.n. [Eureka, July
 1892] (Ka); W. H. Horr s.n. [June 28, 1930] (Lw); R. L. McGregor
 14699 (Lw). Jackson Co.: Clothier & Whitford s.n. [July 28, 1897]
 (Ka). Jefferson Co.: Clothier s.n. [Perry, Oct. 12, 1896] (Ka);
G. Latham 651 (Lw). Johnson Co.: A. S. Hitchcock s.n. [Olathe,
 Aug. 1892] (Ka). Kiowa Co.: A. S. Hitchcock s.n. [Kiowa Co., Aug.
 1896] (Ka). Labette Co.: A. S. Hitchcock s.n. [Labette Co., Aug.
 1896] (Ka); R. L. McGregor 16996 (Lw); B. L. Wagenknecht 1889 (Lw,
 Lw). Leavenworth Co.: A. S. Hitchcock s.n. [Leavenworth Co., May
 1896] (Ka); R. L. McGregor 840 (Lw). Linn Co.: Kellerman s.n.
 [Mound City, July 18, 1887] (Ka); A. R. Moldenke 869 (Lw). Lyon
 Co.: R. L. McGregor 1894 (Lw). Marshall Co.: A. S. Hitchcock s.n.
 [Marshall Co., Dec. 10, 1896] (Ka); W. H. Horr 4582 (Lw). McPher-
 son Co.: A. S. Hitchcock s.n. [McPherson, July 1892] (Ka). Miami
 Co.: A. S. Hitchcock s.n. [Paola, Aug. 1892] (Ka). Mitchell Co.:
A. S. Hitchcock s.n. [Beloit, June 18, 1897] (Ka). Montgomery Co.:
A. S. Hitchcock s.n. [Montgomery Co., Aug. 1896] (Ka); Rydberg &
Imler 432 (Ka--74584, Lw). Morris Co.: A. S. Hitchcock s.n. [Mor-
 ris Co., Aug. 1895] (Ka); J. B. S. Norton s.n. [July 30, 1895]
 (Ka). Nemaha Co.: A. S. Hitchcock s.n. [Nemaha Co., Dec. 11, 1896]
 (Ka). Neosho Co.: A. S. Hitchcock s.n. [Neosho Co., Aug. 1896]
 (Ka); W. H. Horr 6729 (Lw); E. L. Richards 3176 (Lw). Osage Co.:
Z. D. E. Brown s.n. [July 28, 1896] (Ka); B. L. Wagenknecht 3969
 (Lw), 4086 (Lw). Osborne Co.: Neher 348 (Ka--79934). Ottawa Co.:
A. S. Hitchcock s.n. [Ottawa Co., July 1895] (Ka); A. R. Moldenke
 901 (Lw). Philipps Co.: A. S. Hitchcock s.n. [Philipps Co., June
 29, 1897] (Ka). Pottawatomie Co.: D. L. Marsh 1692 (Lw); Pond s.

n. [July 24, 1896] (Ka); B. L. Wagenknecht 3256 (Lw). Republic Co.: G. E. Morley 466 (Lw), 810 (Lw); F. A. Smith s.n. [July 1896] (Ka). Riley Co.: Carleton s.n. [Aug. 2, '92] (C); F. C. Gates 12775 (Lb--27627, Um--185); J. B. S. Norton 389 (Ka, N, W--353116); Waugh s.n. [Aug. 16, 1892] (Ka). Saline Co.: Hancin 429 (Ka--76786); J. B. S. Norton s.n. [Saline Co., September 1895] (Ka). Sedgwick Co.: T. L. Andrews s.n. [Whichita] (Io--28226); Herb. Wichita Univ. 168 (Lw). Shawnee Co.: Maus 842 (Ka--72351); Norton & Clothier s.n. [July 4, 1895] (Ka); Volle 327 (Lw). Smith Co.: A. S. Hitchcock s.n. [Smith Co., June 28, 1897] (Ka). Sumner Co.: A. S. Hitchcock s.n. [Wellington, July 1892] (Ka). Wabaunsee Co.: J. B. S. Norton s.n. [Maple Hill, July 4, 1894] (Ka). Washington Co.: Clothier & Whitford s.n. [July 24, 1897] (Ka); Dodd 137 (Ka--80570); W. H. Horr 4655 (Lw). Wilson Co.: Haller s.n. [Roper, June 16, 1896] (Ka). Woodson Co.: Clothier & Whitford s.n. [Aug. 29, 1897] (Ka); W. H. Horr s.n. [July 10, 1930] (Lw); Horr & McGregor s.n. [July 17, 1947] (Lw); E. W. Lathrop 1304 (N), 1346a (Lw); Mrs. O. E. Rogers s.n. [Yates Center, July 11, 1928] (Ka--76503). Wyandotte Co.: K. K. Mackenzie s.n. [Rosedale, July 12, 1896] (Ka, N); E. L. Richards 3289 (Lw). MISSOURI: Bates Co.: A. R. Moldenke 868 (Lw). Boone Co.: Daniels s.n. [July 1903] (Lb--4180, Lb--4181); D. B. Dunn 13974 (Lb--49681); Favor s.n. [Aug. 29, 1901] (Lb--4179); L. Jeffrey 108 (Lb--30365, Lb--30372); Rickett s.n. [Sept. 1926] (Lb--7093), s.n. [Hermit Hill, July 16, 1927] (Lb--7092). Camden Co.: A. R. Moldenke 857 (Lw). Clay Co.: Brouillette s.n. [Liberty, 7/23/1927] (Je--3161); B. F. Bush 12694d (Lb--14165); Gier 8129 (S). Franklin Co.: A. R. Moldenke 846 (Lw). Greene Co.: Blankinship s.n. [Willard, July 9, 1919] (Po--63847); P. C. Standley 8278a (W--687240). Grundy Co.: Crookshanks 141 (Lb--29612). Henry Co.: H. N. Moldenke 21922 (Lw). Hickory Co.: A. R. Moldenke 859 (Lw). Jackson Co.: Erisman s.n. [Kansas City, July 27, '94] (Ah); K. K. Mackenzie 577 (We), s.n. [July 19, 1896] (N). Jefferson Co.: Favor 588 (Lb--4178). Lincoln Co.: A. R. Moldenke 841 (Lw). Maries Co.: H. N. Moldenke 21918 (Lw). Marion Co.: J. Davis 4592 (Ur). McDonald Co.: E. J. Palmer 4229 (W--1569310). Miller Co.: A. R. Moldenke 854 (Lw). Nodaway Co.: J. R. Singleton 154 (Lb--34597). Pemiscot Co.: Dimmuth 477 (Lb--4177). Phelps Co.: A. R. Moldenke 850 (Lw). Pike Co.: J. Davis 950 (N); A. R. Moldenke 839 (Lw, Ut). Platte Co.: Radloff s.n. [July 5, 1956] (Ur). Saint Louis Co.: Collector undesignated s.n. [Aug. 1893] (S); Eggert 1949 (Lb--4176); C. Epling 6816 (La); A. R. Moldenke 69 [H. N. Moldenke 21799] (Mi); H. N. Moldenke 21800 (Mi). Shelby Co.: Ripley s.n. [Sep. 10, 1902] (Je--3162, Je--3163). Warren Co.: A. R. Moldenke

843 (Lw). Saint Louis: C. F. Baker s.n. [St. Louis, Sept. '99] (Po--64518); Eggert s.n. [St. Louis, Aug. 1875] (Au, Ca--183210, Cm, Io--79866, Mn--6897, N, W--754956); Engelmann s.n. [St. Louis, Sept. 1838] (Dt), s.n. [St. Louis, Sept. 1841] (W--71969), s.n. [St. Louis] (Br); M. Martens s.n. [St. Louis] (Br); Riehl 135 (Br, M). County undetermined: Engelmann s.n. [July 1839] (Br); Spillman 298 (Pl--22608). ARKANSAS: Arkansas Co.: Demaree 14218 (Sm). Ashley Co.: Demaree 23898 (Sm). Baxter Co.: Demaree 23602 (Sm). Benton Co.: Heacox s.n. [July 20, '89] (Ob--50844). Bradley Co.: Demaree 20689 (Sm), 23865 (Sm), 24845 (Sm). Clay Co.: Demaree 26997 (Au--122803, N). Craighead Co.: Demaree 25777 (N), 29241 (Le). Cross Co.: Demaree 19633 (Lb--46744, N, Sm). Drew Co.: Demaree 13601 (Sm, Tl), 17620 (Du--256560, Gg--267614, N, Ok), 17897 [Herb. Drushel 11619] (N, Ok, Ur), 17907 (N, Ok), 24462a, in part (Bm, Sm), 24517 (Sm), 24748 (Sm). Faulkner Co.: Welch 1292 (Dp). Franklin Co.: J. M. Mason s.n. [Meramec State Park, 8/16/37] (Lb--34373). Fulton Co.: Demaree 26391 (N), 26826 (Au--122816, N); Zirkle & Drouet s.n. [Aug. 19, 1928] (Lb--27624, Lb--27625). Garland Co.: Demaree 20470 (Lb--53416, N, Sm); R. Runyon 1487 (W--1568007). Green Co.: Demaree 27097 (Au--112817, N). Hempstead Co.: Demaree 21480 (Hi--170691, N, Sm), 46061 (S). Hot Spring Co.: Demaree 15563 (N), 15609 (Io--152223, Ok), 16520 (Io--152211, Ok, Or--43132, Ur), 17460 (N), 17887 (Bt--52479, Io--152221, Ky, Ok, Ok, Pl--131515, Ur), 18887 (N), 19321 (Sm). Johnson Co.: Demaree 19993 (N, Sm), 20282 (N, Sm). Lawrence Co.: Demaree 30987 (Sm); Rolfs s.n. [8/91] (Io--4489). Lee Co.: Demaree 37358 (Sm). Logan Co.: Pyle 831 (De). Lonoke Co.: Demaree 48818 (Lw). Marion Co.: Demaree 20629 (N, Sm), 45947 (S). Miller Co.: Demaree 44898 (Ca). Montgomery Co.: Demaree 46623 (S). Nevada Co.: M. P. Hollister 110 (W--587798). Ouachita Co.: Demaree 46033 (S). Phillips Co.: Demaree 37358 (Sm), 37402 (Sm, Z). Pope Co.: Demaree 19886 (Lb--53417, N, N, Sm). Prairie Co.: Demaree 15527 (N). Pulaski Co.: Demaree 8193 (Bt--10318, Ca--71741, Dm, Du--233624, N, W--1581641), 8632 (W--1580200). Randolph Co.: Demaree 23906 (Bm, Lb--47030, Sm). Sebastian Co.: Bigelow s.n. [Fort Smith] (W--71976). Sharp Co.: Demaree 26273 (N). Stone Co.: Demaree 27872 (N). Yell Co.: Demaree 20121 (N), 25121 (Sm). LOUISIANA: Bossier Par.: Correll & Correll 10057 (H--78636, N); Penn s.n. [Oct. 29, 1941] (Tl). East Baton Rouge Par.: L. H. Bailey s.n. [Baton Rouge, July 16, 1918] (Ba). Lincoln Par.: Cocks s.n. [July 7, 1901] (Tl). Livingston Par.: Correll & Correll 9129 (H--78594). Natchitoches Par.: Biology Class 302 no. 2169 [L. E. Fox 2169] (Nc); E. J. Palmer 8000 (Gg--182150). Or-

leans Par.: Cocks s.n. [June 1900] (Tl); T. Drummond s.n. [in vicin. New Orleans, 1832] (Lu). Plaquemines Par.: Langlois 611 (N), s.n. [June 1882] (I). Rapides Par.: C. R. Ball 556 (N, W--382828). Saint Landry Par.: Ewan 19328 (Tl). Saint Martin Par.: Correll & Correll 9406 (H--78593). Saint Tammany Par.: Arsène 11083 (W--1031492), 11391 (W--1031496), 12069 (W--1031916). Parish undetermined: Jos. Hale 241 (T); Herb. Hapeman s.n. (Hp); Riddell 1261 (N). NEBRASKA: Adams Co.: H. Hapeman s.n. [Aug. 5, '92] (Hp); R. de Lima 824 (I). Cass Co.: T. A. Williams 13 (W--71975). Cherry Co.: Tolstead 4-706 (Io--145167). Custer Co.: J. M. Bates 1962 (Io--35178). Douglas Co.: Kleeberger s.n. [Omaha] (Gg--31438). Jefferson Co.: Rohrbaugh 167 (Ok). Kearney Co.: Hapeman s.n. [Minden, Aug. 29, 1931] (Au). Nemaha Co.: A. R. Moldenke 923 (Lw, Ut); Shubert s.n. [July 10, 1933] (Ob--50847). Otoe Co.: A. E. Allen s.n. [Talmage, July 16, 1891] (Je--3164); C. J. Elmore s.n. [Talmage, July 6, 1891] (Je--3166). Platte Co.: Clevenger s.n. [Columbus, July 11, 1904] (La). Seward Co.: Kiener 17088 (Ca--36917). County undetermined: Herb. Univ. Nebraska 436 (Au). OKLAHOMA: Atoka Co.: Cory 56795 (St). Bryan Co.: W. S. Blain s.n. [Durant, June 28, 1935] (Bt--29691). Caddo Co.: Edw. Palmer 244 (T, W--71955). Carter Co.: M. Hopkins 6366 (Ok). Cherokee Co.: C. S. Wallis 657 (St), 3396 (St). Choctaw Co.: H. W. Houghton 4032 (N). Cleveland Co.: R. E. Berry 58 (Ok--10347); Bruner s.n. [8/20/24] (Io--117043, Ok--10343); Collector undesignated 227 (Ok--10322); C. T. Eskew 2001 (Ok); M. Hopkins 1094 (Ok), 4610 (Ok); Jeffs s.n. [6/22/1922] (Ok--10339); Personett 96 (Ok--10344). Comanche Co.: M. K. Clemens 11749 (Ba), 11749a (Gg--37143). Custer Co.: Waterfall 2974 (Ok). Delaware Co.: Blevins 63 (St--18581); C. S. Wallis 2438 (St). Garfield Co.: Gephardt 655 (W--2421182). Johnston Co.: G. J. Goodman 6325 (Ok); G. T. Robbins 3163 (Ca--966041, N, Ok). Kay Co.: Byler 190 (St); G. W. Stevens 1821 (Ok, St--9274). Latimer Co.: O. M. Clark s.n. [Red Oak, 6/13/30] (Ok--10341). Major Co.: G. W. Stevens 1742 (Ok). Marshall Co.: G. J. Goodman 5903 (Ca--81888, Ok, St). Mayes Co.: C. S. Wallis 2471 (St), 5233 (St). McCurtain Co.: Hixson 100 (St--13227); Ivy 25:1 (St--20371); Waterfall 12412 (Ca--72112, St, W--2231160). Murray Co.: Hopkins & Demaree 58 (Ba, Ok, St--12768); G. M. Murrill 716 (N, Rf); Stratton 4728 (N, St--26137, St--26138). Muskogee Co.: E. L. Little 189 (Ok--10340), 1931 (Ok--10342); C. S. Wallis 7719 (Au--170516, St). Oklahoma Co.: Waterfall 2441 (N), 2895 (Ok, St), s.n. [June 24, 1939] (Ok). Payne Co.: R. O. Bain 44 (Pl--124970); Bogue s.n. [July 18, 1896] (Ob--50854); Brensing 35 (Ca--882833); R. M. House 95 (Se--29718); C. D. Learn s.n. [July 14, 1916] (St--9271); Pote 66 (Bt--48282); Stratton 158 (St--26123), 3608 (I);

Walton 143 (Au); Waterfall 123 (St); Waugh s.n. [Stillwater, 1893] (Ka). Pontotoc Co.: D. McCoy 807 (St), 1421 (St), 1725 (Au--122805); G. T. Robbins 3110 (Ca--966040); C. Thomas s.n. [Ada, 4-24-35] (Ok). Sequoyah Co.: C. S. Wallis 7704 (Au--170517, St). Tulsa Co.: M. B. Clark 524 (St); J. R. Willis 3 (Ok). Woods Co.: G. W. Stevens 1673 (Du--66082, N, Ok, Ok, Ok--20714, St--9275, St--9277, Ur, W--589621). Woodward Co.: Engleman 513 (St). County undetermined: Clifton 91 (Ok--10346); Herb. Univ. Okla. 10345 (Ok). TEXAS: Angelina Co.: H. J. Hamby 1472 (Ar--206312). Baylor Co.: Tharp 4501 (Au). Bell Co.: S. E. Wolff 1329 (W--1622400), 3247 (Tr, Tr--16239). Bowie Co.: Tharp 2774 (Au). Brazoria Co.: Tharp 2777 (Au), s.n. [8.21.29] (Au). Camp Co.: Moldenke & Woods 561 (S). Cherokee Co.: Ness s.n. [near Rusk, Aug. 15, 1926] (Tr). Dallas Co.: Boll s.n. [1871] (Cb); C. L. Lundell 11581 (N, Rf), 14022 (N, Rf, Rf); M. B. Stephenson s.n. [vicinity of Dallas, June 20, 1929] (W--1432650). Denton Co.: B. B. Harris s.n. [7-20-27] (Au, Nt, Nt); Whitehouse 16426 (Mi, N). Ellis Co.: O. Sanders 5 (Mi). Gonzales Co.: McCart 158 (Au--122793); Tharp s.n. [Ottine, 7-4-1929] (Au, N), s.n. [Ottine, 7-14-1929] (Mi), s.n. [Ottine marsh, 6-26-39] (Au). Grayson Co.: H. Gentry 51-1786 (Au--122791). Hemphill Co.: C. M. Rowell 5563 (Au--195410). Hunt Co.: Thurrow s.n. [Clinton, October 10, 1924] (Hu). Jefferson Co.: G. L. Fisher s.n. [Nome, Sept. 2, 1937] (Ew, Ew, Ew). Lamar Co.: Turner s.n. [Deport, Sept. 1884] (Mi). Milam Co.: S. E. Wolff 4340 (Tr). Montgomery Co.: Warner s.n. [R.R. yard, Conroe] (Hu). Nacogdoches Co.: W. H. Lewis 4999 (Nb). Newton Co.: Tharp s.n. [7-23-39] (Au, Au, Ca--882832, Mi, N). Robertson Co.: Reeves 187 (N). Tarrant Co.: Killian 6933 (Au, W--1465329); Ruth 503 (Cm), 534 (N, Sm, Ur). Trinity Co.: Lewis & Oliver 5304 (Nb); Tharp 2778 (Au, Au). Wise Co.: Whitehouse 16374 (N). Wood Co.: McMullen s.n. [Golden, 6/17/27] (Au), s.n. [9-10-27] (Nt). CULTIVATED: Austria: Halácsy s.n. [h. b. Theresiani, Aug. 1871] (La). Belgium: M. Martens s.n. (Br). England: Linnaeus s.n. [Hort. Cliff. G.834, S.5; Bailey Hort. neg. 6405] (N--photo of type). France: Herb. Harvey s.n. [h.R.P. 1819] (Du--166444), s.n. [h.R.P. 1844] (Du--166441), s.n. [h.R.P.] (Du--155434); Herb. Molliano s.n. [P.] (Br); Herb. Schumacher s.n. [h. Paris] (Cp). Germany: Herb. Harvey s.n. [Pottstadt hort. bot. 1810] (Du--166442); R. Schulz s.n. [Berlin, 11.8.1897] (B). Italy: Herb. Harvey s.n. [h.P. 1820] (Du--166443). Maryland: McCann s.n. [9-15-36] (Md). New York: Eggleston & Schneider s.n. [July 18, 1905] (N); R. C. Schneider s.n. [N. Y. Bot. Gard. Cult. Pl. 25417] (N). Pennsylvania: J. M. Greenman 1374 (Du--123485). Spain: Herb. Hort. Hispal. 67 (Q); Herb. Hort. Reg. Matrit. 59 (Q); Pascal 66

(Q). Sweden: Linnaeus s.n. [hort. Ups.] (F--photo, F--photo, N--photo, N--photo, S, S, Sg--photo, Sg--photo, Z--photo, Z--photo); Nietzel s.n. [hort. Ups.] (F--photo, N--photo, S, Sg--photo, Z--photo); Reuteran s.n. [19/9/1888] (Go); Vestergren s.n. [1925.5. VIII] (S). Switzerland: Herb. Hort. Bot. Bern. s.n. [Aug. 1827] (W--264610); Herb. Hort. Bot. Genev. s.n. [Jul. 1828] (W--264609). LOCALITY OF COLLECTION UNDETERMINED: Alstroemer s.n. [Bara] (S); Collector undesignated 63 (Q), 64 (Q); Dascomb s.n. [13.1] (Ob--50852); W. Dearness 83 [Oaklands] (Mg); Disbrow s.n. (Nm); Engelmann s.n. [Amer. bor.] (Br, S); Freed s.n. [Amer. bor.] (S); Gibbes s.n. (N); Herb. Buckley s.n. (T); Herb. Chapman s.n. [New England] (C); Herb. Coll. Pharmacy s.n. (Pa); Herb. Liebmann s.n. [North America] (Cp); Herb. Linnaeus G.35, S.13 (Ls, N--photo, Z--photo); Herb. Martius s.n. (Br); Herb. Mus. Bot. Stockholm 14 [North Am.] (S), s.n. (S); Herb. Saldanha 2767 [U.S.A.; Herb. Mus. Nac. Rio ref. VII] (Ja); L. A. Koehler s.n. [U. S.] (Pa); Linderall s.n. [N. Am.] (S); M. Martens s.n. (Br); N. Y. Bot. Gard. Economic Mus. 5750 (N); Osbeck s.n. (S); Palisot de Beauvois s.n. [Etates Unis, 1819] (Du--166440); Schumacher s.n. [North Am.] (S); J. Torrey s.n. [ex Amer. septentr.] (Bm, S), s.n. [Fl. Bor. Am.] (T); Weigand s.n. [Herb. Krause 32445] (B); A. Wood s.n. [N. Eng.] (Pa). MOUNTED ILLUSTRATIONS AND CLIPPINGS: Perry & Fernald, *Rhodora* 38: pl. 45, fig. 1--4. 1936 (N); No. 448 (N); fig. 8675 (N).

VERBENA URTICIFOLIA var. *INCARNATA* (Raf.) Moldenke, *Phytologia* 7: 259. 1960.

Synonymy: *Verbena incarnata* Raf., *Atl. Journ.* 154. 1832.

Bibliography: Raf., *Atl. Journ.* 154. 1832; Raf., *Herb. Raf.* 69. 1833; Jacks. in Hook. f. & Jacks., *Ind. Kew.* 2: 1179. 1895; Perry, *Ann. Mo. Bot. Gard.* 20: 342 & 355. 1933; E. D. Merr., *Ind. Raf.* 205 & 295. 1949; Moldenke, *Phytologia* 7: 259. 1960; Moldenke, *Résumé Suppl.* 2: 1 & 15 (1960) and 7: 9. 1963; Moldenke, *Phytologia* 9: 93 (1963) and 11: 338. 1965.

This variety is said to differ from the typical form of the species in having narrower leaves, the spikes not paniculate, and the flowers flesh-color instead of white.

The type of the variety was collected by Samuel Constantine Rafinesque along the Juniata River (this could be in Huntingdon, Mifflin, Juniata, or Perry Counties), Pennsylvania. The original description is "Stem branched; leaves ovate lanceolate serrate rough, flowers in simple slender short spikes....on the Juniata R....one foot high, flowers flesh-colored. Differs from *V. urticifolia* narrower leaves, spikes not paniculate, nor flowers white." Perry (1933) says "Here again the description is too inadequate for specific identification." Jackson (1895) incorrectly cites the original publication as being on page "153", which it is not.

Without an examination of the type specimen it is not possible to be certain of the status of this plant. Perhaps it is a mere

color variant of V. urticifolia L., and possibly the Shinners 1479, whose flowers are described by the collector as having been "pale bluish-white", and Harris s.n. [June 26, 1933], whose flowers are said to have been "pink" -- both cited by me under typical V. urticifolia -- and F. R. Fosberg 15695, whose flowers are said to have been "pinkish-white" and Eames & Wiegand 12796, with "pink" flowers, cited by me as var. leiocarpa Perry & Fernald, belong to var. incarnata instead. It is also not beyond the realm of possibility that Rafinesque's plant was nothing more nor less than xV. engelmannii Moldenke, but I am inclined to doubt this.

VERBENA URTICIFOLIA var. LEIOCARPA Perry & Fernald in Fernald, Rhodora 38: 441--443, pl. 450, fig. 5--8. 1936.

Synonymy: Verbena urticaefolia var. leiocarpa Perry & Fernald ex Deam, Kriebel, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 51: 127. 1942. Verbena ultricifolia var. leiocarpa Perry & Fernald ex Moldenke, Am. Journ. Bot. 32: 609, sphalm. 1945. Verbena urticaefolia var. leiophylla Fern. & Perry ex Moldenke, Alph. List Invalid Names Suppl. 1: 27, in syn. 1947. Verbena urticaefolia f. leiocarpa Deam, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 60: 87. 1951. Verbena urticifolia leiocarpa Perry & Fernald ex Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2209. 1951.

Bibliography: Perry & Fernald in Fernald, Rhodora 38: 441--443, pl. 450, fig. 5--8. 1936; C. C. Deam, Fl. Indiana 795, 796, & 1232, map 1720. 1940; Moldenke, Suppl. List Common Names 24. 1940; Moldenke, Obs. Fl. Watchung Suppl. 1: 1. 1941; Deam, Kriebel, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 51: 127. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 2--4, 6--8, 11, 12, 76, & 102. 1942; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 1 & 2. 1943; Moldenke, Fl. N. Appal. Exp. Watershed 28 & 56. 1943; Moldenke, Obs. Fl. Warren 27. 1944; Moldenke, Castanea 9: 69 (1944) and 10: 36 & 38. 1945; G. N. Jones, Fl. Ill. [Am. Midl. Nat. Monog. 2:] 215--216. 1945; Moldenke, Bot. Gaz. 106: 158--161. 1945; Moldenke, Am. Journ. Bot. 32: 609. 1945; Moldenke, Phytologia 2: 80, 84, & 117. 1945; Deam, Kriebel, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 54: 95. 1945; Moldenke, Am. Midl. Nat. 35: 377. 1946; Moldenke, Alph. List Cit. 1: 5, 10, 14, 15, 18, 25, 32, 33, 38, 46, 51, 98, 124, 125, 130, 139, 142, 144, 148--151, 159, 160, 175, 177, 182, 184, 197--199, 204--206, 208, 213--215, 234, 239, 244, 248, 253, 262, 265, 267, 270, 271, 278--282, 284, 287, 288, & 291--294. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 27. 1947; Moldenke, Phytologia 2: 326, 329, 382, & 383. 1947; Deam, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 56: 110 (1947) and 58: 95. 1948; Moldenke, Wrightia 1: 224. 1948; Moldenke, Castanea 13: 111, 112, & 121. 1948; Moldenke, Alph. List Cit. 2: 296, 391--394, 396--400, 449, 455, 469, 491--493, 496, 506, 512, 513, 520, 524, 538, 544, 555, 558, 576, 583, 584, 589, 594, 606, 617, 620, & 630 (1948), 3: 653, 667, 668, 684, 698, 721, 743--745, 747, 750, 759, 760, 769, 778, 783, 791--793, 823, 828, 842, 848, 887, 892, 898, 912, 927,

934, 938, 942, 963, & 977 (1949), and 4: 979, 985, 1002--1004, 1095, 1098, 1109, 1112, 1114, 1117--1119, 1122, 1123, 1137, 1174, 1176, 1177, 1179, 1181, 1185, 1189, 1211, 1224, & 1227. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 4--8, 12--18, 20, 24, 165, & 200. 1949; Moldenke, *Phytologia* 3: 72, 130, & 131 (1949) and 3: 283. 1950; Fernald in A. Gray, *Man. Bot.*, ed. 8, 1210. 1950; Moldenke, *List Obs. Fl. Watchung Suppl.* 2, re-issue: 46. 1951; Moldenke in Chittenden, *Roy. Hort. Soc. Dict. Gard.* 6: 2209 & 2213. 1951; Deam, Yuncker, & Friesner, *Proc. Ind. Acad. Sci.* 60: 87. 1951; Moldenke, *Phytologia* 3: 450 (1951) and 4: 66--68. 1952; Moldenke in Gleason, *New Britton & Br. Illustr. Fl.*, print. 1, 3: 129 & 130. 1952; Deam, Yuncker, & Friesner, *Proc. Ind. Acad. Sci.* 61: 75. 1952; Moldenke, *Phytologia* 4: 185. 1953; Moldenke, *Notes Pl.* 2: 46. 1957; Moldenke in Gleason, *New Britton & Br. Illustr. Fl.*, print. 2, 3: 129 & 130. 1958; Strausbaugh & Core, *Fl. W. Va.* 3: 774. 1958; Moldenke, *Résumé* 6--11, 15--21, 23, 25, 26, 30, 225, 337, 428, & 474. 1959; Moldenke, *Résumé Suppl.* 1: 1--3 & 23 (1959), 2: 2 & 13 (1960), 3: 2--4, 7, 36, & 41 (1962), 4: 1--3 (1962), 5: 1 (1962), and 6: 1, 2, & 9. 1963; Steyerma., *Fl. Mo.* 1258. 1963; Moldenke, *Phytologia* 8: 487 (1963), 9: 215 (1963), 10: 101, 106, & 109 (1964), and 11: 55 & 128. 1964; Moldenke, *Résumé Suppl.* 8: 1 & 6 (1964) and 11: 1. 1964; Moldenke, *Phytologia* 11: 338, 341, 342, & 346. 1965.

Illustrations: Perry & Fernald in Fernald, *Rhodora* 38: pl. 450, fig. 5--8 [by E. C. Ogden]. 1936; Moldenke in Gleason, *New Britton & Br. Illustr. Fl.*, print. 1, 3: 130 (1952) and print. 2, 3: 130. 1958.

This variety differs from the typical form of the species in having its leaves densely and uniformly puberulent, short-pubescent, or velutinous beneath, the hairs to 0.3 mm. long, spread over the entire surface, the mature inflorescence-branches usually filiform, loosely ascending or divergent, puberulent, the mature calyx to 2 mm. long, puberulent, the bractlets 0.5--1 mm. long, and the cocci 1.5 mm. long.

The type of the variety was collected by Merritt Lyndon Fernald, Bayard Henry Long, and John Milton Fogg, Jr. (no. 5013) in rich woods at Virginia Beach, Virginia, on September 10, 1935, and is deposited in the Gray Herbarium of Harvard University. In the original publication the following specimens are also cited: CONNECTICUT: Hartford Co.: C. Wright s.n. [Wethersfield] (G). NEW JERSEY: Union Co.: Long s.n. [Port Elizabeth] (G). VIRGINIA: Isle of Wight Co.: Fernald, Griscom, & Long 6674 (G). Southampton Co.: Fernald & Long 6864 (G). Sussex Co.: Fernald, Griscom, & Long 6673 (G). NORTH CAROLINA: Durham Co.: Blomquist 1149 (G). SOUTH CAROLINA: Williamsburg Co.: Wiegand & Manning 2714 (G).

Fernald (1936) says: "Common and wide-spreading typical *Verbena urticifolia* has the leaves strigose-hirsute on the veins beneath.... with stiff hairs up to 1--1.3 mm. long, or glabrate; the mature inflorescence.....with usually stiffly ascending strigose branches; mature calyx.....strigose, 2--2.3 mm. long, the subtending bract 1--

1.5 mm. long; mature nutlets.....about 2 mm. long and definitely corrugated or ribbed on the back. Var. leiocarpa, on the other hand, has the thin leaves.....velutinous or subvelutinous beneath with minute hairs only very rarely 0.3 mm. long; the panicle.....lax, with loosely ascending to divergent puberulent, filiform mature branches; the mature calyx....at most 2 mm. long and puberulent, with very short (0.5--1 mm. long) bract; and the tiny nutlets.....only 1.5 mm. long and quite smooth on the back. Although an old and undated sheet from Connecticut is in the Gray Herbarium, no other material is found there or in the extensive local collection of the New England Botanical Club from north of New Jersey.

"Verbena urticifolia var. leiocarpa, although having the same general lax habit as *V. scabra Vahl, collected by Fernald & Long in SURRY COUNTY, October, 1936 (border of tidal marsh along Gray's Creek, near Cross Creek Landing, south of Swann Point, no. 6863, the first collection from north of Wilmington, North Carolina), may be readily distinguished in flower by the bilobed character of the stigma, the stigmatic surface being subtended by one sterile lobe. In V. scabra, on the other hand, the stigmatic surface lies between two almost equal sterile lobes. The fruiting calyx of V. urticifolia, var. leiocarpa is only slightly divergent from the rachis and the nutlets are smooth; whereas, in V. scabra the fruiting calyx is strongly divergent and the nutlets reticulate above. Furthermore, after drying, the plants in question are easily separable on foliar character, the upper surface of the leaves of V. urticifolia, var. leiocarpa being much less harsh to the touch than those of V. scabra."

The variety is native to the eastern and central United States, occurring with the typical form from Connecticut, southern New York, Pennsylvania, and Ohio west to the Dakotas and south to Florida and Texas. It is described by collectors as being erect, 3--5 feet tall, branching, with fibrous roots, and white flowers. Common names recorded for it are "nettle-leaved vervain", "short-hair white vervain", "white vervain", and "white vervian".

It has been collected in open or waste places, dry waste places, ditches and wet ditches, bogs and boggy depressions, marshes, thickets and fencerows, fields, old or dry fields, wet sloughs, low pastures and pasture land, wooded and small wooded ravines, woods, rich or alluvial woods, dry or moist woods, dense or open woods, low woods and dry shaley woods along the banks of creeks, in moist hollows or clearings in woods, beds of drained ponds, in mixed or oak-hickory woods, moist woodlands, low marshy land, in flatwoods, semi-shaded areas, moist places near roads, in oak-hickory or pine-oak-hickory forests or mixed deciduous forests, and in limestone quarry talings, along roadsides and low roadsides, brooks and creeks, in moist pebbly ground and in damp ground of pastures, in dry or clay soil, swampy or moist open weedy soil, in low brushy soil, and sand or clay as well as in well-drained gravelly sandy loam, on open or wooded limestone

hillsides, limestone cliffs, wooded bottomlands, riverbanks and wooded riverbanks, stream banks, rocky creek bottoms and banks, creek bottoms and flat open gulch bottoms, on dry wooded banks, wooded and loamy wooded slopes, rich sandy slopes, and grazed woodlots. It has been found at the edges of meadows and woods, at the margins of woodlands, the base of limestone cliffs in rich oak-sugar maple woods, and at woodland and low woodland borders, often growing in the shade, at altitudes of 200 to 1200 feet, flowering from June to September, and fruiting from July to October.

In New Jersey it is said by Mackenzie to be "common in woodlands"; in Iowa it is described by Pammel & Spiker as growing as a common weed in low ground in pastures, widely distributed, associated with Scirpus atrovirens, Echinochloa crus-galli, and Persicaria lapathifolia. Schallert says that in Wisconsin it is "weedy but not troublesome", while in Indiana it is called a "weed in old pastures" by Ek. In North Carolina it grows in the "maple-birch-magnolia association" according to Radford. Johnson says "not common in heavily grazed pasture" in Wisconsin, while Struik found it in "mesic woods with Acer saccharum, Ulmus americana, U. rubra, Tilia americana, etc." in the same state.

Material of V. urticifolia var. leiocarpa has been misidentified and distributed in herbaria under the names V. caroliniana L., V. hastata L., V. hastata x urticifolia Eggert, V. polystachya H.B.K., V. scabra Vahl, V. urticaefolia L., V. urticaefolium L., V. urticaefolia L., V. urticifolia L., and V. urticifolia Gray & Small. On the other hand, the Friesner 6044 and H. N. Moldenke 15426 distributed as V. urticifolia var. leiocarpa are typical V. urticifolia L. instead. The Herb. Hort. Bot. Genev. s.n. [18 Aug. 1826], cited below, is a mixture with V. recta H.B.K. H. N. Moldenke 13981 is infested with Erysiphe cichoracearum P. DC., determined by Dr. F. D. Kern. Plymale 542 has very short hairs. F. R. Fosberg 15695 is said to have had "pinkish-white" flowers, while Eames & Wiegand 12796 had "pink" flowers -- both collections may represent var. incarnata (Raf.) Moldenke. P. Johnson 33 may actually be the typical form of the species. E. E. Chambers 27 has inflorescences exactly like those of var. leiocarpa, but all its other characters are those of typical V. urticifolia, so I am citing it as that.

The Bouché s.n. cited below does not have any indication on its label that it came from cultivated material, but I am assuming that it did. The "Stearns" County, West Virginia, recorded for this variety by me in my Résumé 9 (1959) appears to be an error in transcription for Stearns County, Minnesota.

Eggleston 4841, Grimes 3794, Visser 2263, Rydberg 1716, Aiton 8467, Baker s.n. [St. Croix Falls], Gibbs s.n. [Charleston], Schuette s.n. [Green Bay], and J. K. Small s.n. [Reed Creek] are all cited by Perry (1933) as typical V. urticifolia, but this was

done before she recognized the variety, which these collections actually represent. G. N. Jones (1945), however, again reduces the variety to synonymy under V. urticifolia. J. A. Harris C. 15997 is a mixture with typical V. urticifolia.

Core records the variety from Pocahontas County, West Virginia, while Deam, Yunker, & Friesner (1947, 1948, 1951, 1952) record it from Daviess, Delaware, Fountain, Huntington, Orange, Owen, and Steuben Counties, Indiana.

In all, 379 herbarium specimens and 1 mounted illustration have been examined by me.

Citations: NEW YORK: Bronx Co.: T. W. Edmondson 11492 (N); G. V. Nash s.n. [Bronx Park, July 14, 1896] (N). Dutchess Co.: Standley & Bollman 11996 (W--895562). Orange Co.: Raup 7603 (N). Queens Co.: Ferguson s.n. [Kew Gardens, 8-1-19] (N). Steuben Co.: H. N. Moldenke 20554 (N). Suffolk Co.: Ferguson 4382 (N); J. A. Harris C. 15997, in part (B); L. K. Henry s.n. [July 23, 1926] (Cm); Shull 543 (N). Tompkins Co.: Eames & Wiegand 12796 (S). Ulster Co.: Macfarlane s.n. [Phoenicia Valley] (Up--46414); Whitney 4803 (Al). Westchester Co.: Herb. N. Y. Bot. Gard. s.n. [July 13, 1896] (N), s.n. [August 5, 1896] (N); Monachino 467 (Ec, N); W. A. Weber 1043 (Bl--48171). County undetermined: Herb. Torrey s.n. [New York] (T); J. Torrey 747 (Al). NEW JERSEY: Burlington Co.: H. N. Moldenke 21875 (Fg). Camden Co.: J. M. Fogg 7633 (Up). Cape May Co.: Fender 1159 (Up); Macfarlane s.n. [Holly Beach, Sept. 1, 1907] (Up--45857). Essex Co.: K. K. Mackenzie 349 (Dm, N). Gloucester Co.: J. M. Fogg 8642 (Up); B. H. Long 26200 (Ca--882843). Mercer Co.: J. M. Fogg 5376 (Up). Morris Co.: Reis s.n. [Lake Hopatcong, Aug. '89] (N). Somerset Co.: J. M. Fogg 12324 (Up), 12395 (Up); H. N. Moldenke 11788 (N), 18362 (Ec). Sussex Co.: Krausser & Cohen s.n. [Aug. 24, 1938] (Up). Union Co.: P. Wilson s.n. [Plainfield, Sept. 1901] (N). Warren Co.: Ahles 929/48 (Ur). PENNSYLVANIA: Bedford Co.: Berkheimer 1188 (Up). Chester Co.: F. R. Fosberg 15695 (Up). Clearfield Co.: O. E. Jennings s.n. [Aug. 25, 1925] (Cm). Clinton Co.: M. T. Travis 2801 (Up). Columbia Co.: F. R. Fosberg 15987 (Up). Delaware Co.: J. M. Fogg 10069 (Up); W. Stone 5572 (Up). Franklin Co.: A. R. Moldenke 100 (Fg). Greene Co.: O. E. Jennings s.n. [9/3/40] (Cm). Lackawanna Co.: Glownke 581 (Up). Lawrence Co.: Henlen 61 (Cm). Northampton Co.: Jennings, Jennings, & Gress s.n. [July 28, 1920] (Cm); R. L. Schaeffer 3327 (Ok). Northumberland Co.: P. R. Wagner 9063 (Up). Pike Co.: DePue 356 (Up). Schuylkill Co.: P. R. Wagner 5852 (Up), 6036 (Up). Snyder Co.: J. M. Fogg 17907 (Up). Somerset Co.: Shetler 290/3 (N). Sullivan Co.: F. R. Fosberg 15940 (Up). Washington Co.: L. K. Henry s.n. [9/13/40] (Cm). Wayne Co.: Jennings, Jennings, & Gress s.n. [Aug. 21, 1920] (Cm). Westmoreland Co.: E.

H. Graham s.n. [July 15--22, 1923] (Cm); L. K. Henry s.n. [9/11/40] (Cm). MARYLAND: Allegeny Co.: R. C. Alexander s.n. [Allegheny, July '49] (Ca--379998). Garrett Co.: J. D. Smith s.n. [Aug. 15, '78] (W--1323136). Talbot Co.: E. C. Earle 3112 (Up). Worcester Co.: Raymond 197 (I). DISTRICT OF COLUMBIA: F. Blanchard s.n. [11 July 1891] (Or--14309); H. T. Holm s.n. [19/7/1912] (I, N, Ur), s.n. [1912] (S); P. B. Kennedy s.n. [July 27th, 1899] (Gg--186449). VIRGINIA: Bedford Co.: Curtiss s.n. [July 30, 1872] (Pu). Carroll Co.: H. N. Moldenke 19271 (N, Or). Charles City Co.: A. R. Moldenke 484 (Fg). Greensville Co.: Fernald & Long 10801 (Cn, H--68436, It, Ok). Isle of Wight Co.: Fernald, Griscom, & Long 6674 (N). James City Co.: A. R. Moldenke 482 (Fg). Loudoun Co.: Leonard & Killip 891 (Ur, W--1220059). Nansemond Co.: Kearney 1739 (W--356404); A. R. Moldenke 478 (Fg). New Kent Co.: A. R. Moldenke 483 (Fg, S). Norfolk Co.: A. R. Moldenke 480 (Fg). Page Co.: E. H. Walker 2654 (W--1839491), 2668 (W--1839505). Southampton Co.: Fernald & Long 6864 (Up). Sussex Co.: Fernald & Long 7588 (N, W--1699826). Wythe Co.: J. K. Small s.n. [Reed Creek, at base of Lower Rock, July 23, 1892] (C). Lynchburg: L. B. Henderson 1434 (Bt--44857). Williamsburg: Grimes 3794 (N); A. R. Moldenke 485 (Fg). WEST VIRGINIA: Barbour Co.: E. L. Core 5957 (We). Clay Co.: E. L. Core 6337 (We). Greenbrier Co.: R. B. Clarkson 2679 (We). Hancock Co.: Sumpstein s.n. [7/38] (We). Jackson Co.: Guthrie s.n. [July 18, 1953] (We). Mercer Co.: E. Dickinson 19 (We). Monongalia Co.: J. L. Sheldon s.n. [Dellslow, 7/9/18] (We); Shunk 344 (We); Strausbaugh 344 (We). Ohio Co.: R. West 686 (We). Preston Co.: Davis & Davis 766 (We); J. C. Myers 545 (Ur). Randolph Co.: E. E. Hutton s.n. [Huttonville, Aug. 26, 1938] (We); A. H. Moore 3541 (Up). Ritchie Co.: E. L. Core 5672 (We). Summers Co.: M. C. Beals s.n. [Camp Brookside, August 13--15, 1958] (We); Boone 251 (We). Tucker Co.: A. H. Moore 2110 (Io--131756). Wayne Co.: Plymale 542 (Ky). Webster Co.: Hinkle s.n. [August 17, 1957] (We). Wetzell Co.: Haught 626 (We). Wirt Co.: E. A. Bartholomew 1935-77, in part (We). Wyoming Co.: E. L. Core 1760 (Bt--48559). NORTH CAROLINA: Alleghany Co.: A. E. Radford 38401 (Hi--104434). Ashe Co.: Ashe s.n. [July 29] (Hi--59479); D. S. Correll 3981 (H--40253). Avery Co.: Ahles & Duke 47326 (Hi--104433). Bladen Co.: Ahles & Haesloop 29219 (Hi--104430). Buncombe Co.: D. S. Correll 79 (H--27637). Burke Co.: A. E. Radford 2556 (Hi--31120). Caldwell Co.: A. E. Radford 14988 (Hi--92887). Catawba Co.: D. S. Correll 2927 (H--40238); Correll & Oosting 2841 (Bt--35531). Cherokee Co.: A. E. Radford 17363 (Hi--110652). Craven Co.: A. E. Radford 37615 (Hi--104428). Currituck Co.: Ahles & Duke 48221

(Hi--104438). Duplin Co.: Ahles & Leisner 33221 (Hi--104447). Durham Co.: Oosting 33128 (H--17867). Edgecombe Co.: A. E. Radford 36752 (Hi--104448, S). Franklin Co.: Ahles & Leisner 20668 (Hi--92736). Gates Co.: Ahles & Duke 51483 (Hi--110653). Graham Co.: A. E. Radford 14217 (Hi--92890). Greene Co.: A. E. Radford 36592 (Hi--104449). Haywood Co.: Beaven 415 (Gu--10085); Blomquist 4714 (H--5456), s.n. [Lake Junaluska, July 1, 1930] (Bt--17342); N. Hall 87 (Fl--29037); A. L. Price 425 (N). Hertford Co.: Ahles & Haesloop 52358 (Hi--112963, Hi--112964). Iredell Co.: Ahles & Duke 48761 (Hi--112966, Hi--112967). Jackson Co.: A. R. Moldenke 53 [H. N. Moldenke 21777] (Bm). Jones Co.: A. E. Radford 37277 (Hi--104450). Lenoir Co.: A. E. Radford 28878 (Hi--92740). Lincoln Co.: C. R. Bell 15303 (Hi--146190). Macon Co.: A. E. Radford s.n. [Aug. 24, 1946] (Hi--35249), s.n. [Sept. 1, 1948] (Hi--35124). Mitchell Co.: Ashe s.n. [Roan Mtn., July 1893] (Hi--59467). Northampton Co.: Ahles & Haesloop 52500 (Hi--112971). Pitt Co.: A. E. Radford 39635 (Hi--104471). Polk Co.: E. C. Townsend s.n. [July 11, 1899] (Pl--86891). Robeson Co.: Britt 2339 (Hi--177878). Sampson Co.: Ahles & Haesloop 29971 (Hi--104468). Scotland Co.: Ahles & Haesloop 28791 (Hi--104469). Stokes Co.: A. E. Radford 37762 (Hi--104470). Swain Co.: D. S. Correll 3709 (H--40250); J. Mooney s.n. [Qualla] (W--2177849); A. E. Radford 17012 (Hi--92743). Wake Co.: R. K. Godfrey 4990 (Hi--10466, No--8600). Warren Co.: C. R. Bell 4199 (Hi--92802). Washington Co.: A. E. Radford 38761 (Hi--104464). Wilkes Co.: Radford & Stewart 1755 (Hi--16062). Yancey Co.: Ahles & Duke 46724 (Hi--121520, Hi--121521). SOUTH CAROLINA: Bamberg Co.: Ahles & Haesloop 30535 (Hi--104431). Berkeley Co.: Ahles & Haesloop 30751 (Hi--104432). Charleston Co.: Gibbes s.n. [Aug. 19, 1859] (N). Clarendon Co.: A. E. Radford 28214 (Hi--92733). Colleton Co.: J. H. Rice s.n. [Aug. 4, 1927] (Hi--59474). Darlington Co.: W. C. Coker s.n. [July 8, 1909] (Hi--59465); B. E. Smith 1462 (Hi--26477). Dorchester Co.: Ahles & Haesloop 37876 (Hi--121519); Ahles & Leisner 31948 (Hi--104426). Florence Co.: C. R. Bell 13353 (Hi--121526). Georgetown Co.: Tarbox s.n. (N). Lancaster Co.: Ahles 34786 (Hi--104475). Lexington Co.: E. A. McGregor 258 (Du--75708, W--984754). Oconee Co.: A. E. Radford 17859 (Hi--92896). Orangeburg Co.: Ahles & Leisner 31725 (Hi--104473). Pickens Co.: A. E. Radford 16874 (Hi--90515). Saluda Co.: A. E. Radford 26869 (Hi--92747). Sumter Co.: A. E. Radford 27478 (Hi--92744). Union Co.: O. M. Freeman 56527 (Hi--92801). Williamsburg Co.: Godfrey & Tryon 466 (W--1837344). York Co.: Ahles 34508 (Hi--104460, Hi--104461). Witherspoon Island: B. E. Smith 1463 (Hi--

26476). FLORIDA: Leon Co.: Rugel s.n. [Tallahassee, Mai 1843] (Go). OHIO: Cochocton Co.: H. N. Moldenke 12529 (Co--535), 12777 (Co--1012), 12989 (Co--1179), 13142 (Co--1239), 13981 (Co--2170, Da). Hamilton Co.: E. L. Braun s.n. [Anderson's Ferry, July 24, 1917] (Cn); C. G. Lloyd s.n. [July 24, 1882] (Pl--72007). ILLINOIS: Alexander Co.: G. N. Jones 12031 (Il--15823, N, Ur). Champaign Co.: N. H. Bell 160 (Ur); Herb. Univ. Ill. 17466 (Ur); Seymour s.n. (Ur--17467); Waite s.n. (Ur--29663). Coles Co.: G. D. Fuller 10700 (Il--21850). McLean Co.: G. D. Fuller 211 (Il--15824), 7441 (Ur). Moultrie Co.: Winterringer 9129 (Il--39406). Piatt Co.: G. N. Jones 19214 (Ur). County undetermined: Stark s.n. [8/9/23] (Dp). INDIANA: Bartholomew Co.: C. C. Deam 36909 (Dm); Friesner 12936 (Bt--42833). Blackford Co.: C. C. Deam 173 (Dm). Brown Co.: Friesner s.n. [Trevlac, 7/12/30] (Bt--4043). Carroll Co.: C. C. Deam 51087 (Dm). Dearborn Co.: Friesner 12490 (Bt--42189). Decatur Co.: Friesner 7198 (Bt--17515). Fayette Co.: C. C. Deam 52508 (Dm). Franklin Co.: C. C. Deam 36974 (Dm). Grant Co.: C. C. Deam 2474 (Dm). Greene Co.: Friesner 5243 (Bt--9936). Hamilton Co.: Friesner 17250 (Bt--63440); H. Morrison s.n. [Noblesville, July 17, 1910] (Du--9543). Hancock Co.: Ek s.n. [6-27-1942] (Bt--64524). Jay Co.: C. C. Deam 50722 (Dm). Jefferson Co.: Friesner 13148 (Bt--43663). Jennings Co.: C. C. Deam 37007 (Dm). Madison Co.: C. C. Deam 2462 (Dm). Miami Co.: Ek s.n. [Sept. 20, 1941] (Dp--27408), s.n. [July 1, 1942] (Dp--33116). Monroe Co.: Friesner 6003 (Bt--12739). Montgomery Co.: C. C. Deam 32801 (Dm). Morgan Co.: C. C. Deam 2261 (Dm). Orange Co.: Friesner 22803 (B, N, S). Parke Co.: Daubermire s.n. [July 20, '29] (Bt--3509). Porter Co.: C. C. Deam 39523 (Dm). Randolph Co.: C. C. Deam 63096 (N). Ripley Co.: C. C. Deam 58103 (N). Scott Co.: C. C. Deam 28024 (Dm). Vermillion Co.: C. C. Deam 53143 (Dm). Washington Co.: C. C. Deam 37137 (Dm). Wayne Co.: C. C. Deam 50744 (Dm). White Co.: C. C. Deam 39321 (Dm). Whitely Co.: C. C. Deam 57147 (Dm). IOWA: Allamakee Co.: L. H. Pammel s.n. [Aug. 18, 1929] (Io--133994). Boone Co.: Pammel, Buchanan, & King 3920 (Io--33058). Butler Co.: Whaley s.n. [July 24, 1918] (Io--138472). Cass Co.: A. R. Moldenke 935 (Lw, Ut). Chickasaw Co.: Pammel & Spiker 683 (Io--119144). Dallas Co.: L. H. Pammel s.n. [Dawson, Aug. 16, 1918] (Io--95630). Delaware Co.: A. R. Moldenke 984 (Lw). Floyd Co.: Arthur s.n. [Charles City, July 15, 1872] (Ah), s.n. [Charles City, 7/16/1872] (Ah), s.n. [Charles City, 7/15/81] (Ah). Greene Co.: L. H. Pammel s.n. [Churdan, Jul. 29, 1928] (Io--132870). Hardin Co.: L. H. Pammel s.n. [Steamboat Rocks, 9-12-12] (Io--52671). Howard Co.: L. H. Pammel s.n. [Sara-

toga, Sept. 2, 1919] (Io--96236). Jasper Co.: Sipe s.n. [Colfax, Jul. 1922] (Io--105826). Marshall Co.: Pammel & Fogel 4075 (Io--42398). Poweshiek Co.: Mrs. E. J. Hill s.n. [Montgomery] (Io--107762). Story Co.: Fawcett, Tener, & Reinbott s.n. [Slater, Sept. 13, '02] (Io--42578); A. Hayden s.n. [August 10, 1932] (N); A. S. Hitchcock s.n. [Ames, July '82] (Io--15332). Union Co.: T. L. Andrews s.n. [Creston] (Io--22903). Winneshiek Co.: Goddard s.n. [7-6-95] (Io--72018); Holway s.n. [July 16, 1881] (Io--38762). KENTUCKY: Edmonson Co.: Lix 433 (W--1948073). Estill Co.: Wharton 5186a (N). Marshall Co.: Eggleston 4841 (N). TENNESSEE: Carter Co.: D. M. Brown 137 (H--40221). Greene Co.: A. R. Moldenke 55 (H. N. Moldenke 21779] (Bm). Obion Co.: Jennings & Jennings s.n. [Reelfoot Lake, 1924] (Cm). Roane Co.: Nease 515 (W--2175280). Sevier Co.: Wehmeyer 361 (Mi, N). MICHIGAN: Ingham Co.: L. H. Bailey s.n. [Lansing, 1879] (Ba); M. Craig 12088 (Ca--367851). Menominee Co.: Grassl 2702 (Mi). Monroe Co.: B. Robertson 318 (Mi). WISCONSIN: Beloit Co.: Herb. Scient. Assoc. Beloit Coll. s.n. (Ws). Brown Co.: P. O. Schallert 338 (H--5481); Schuetz s.n. [July 7, 1878] (N). Buffalo Co.: H. H. Smith 7180 (Ws). Fond du Lac Co.: A. R. Moldenke 1015 (Lw, Ut). Green Co.: E. W. Fell 58-620 (Ws); Struik s.n. [August 19, 1956] (Ws); Stuntz s.n. [July 14, 1891] (Ws). Juneau Co.: L. S. Cheney 3711 (Ws). LaCrosse Co.: T. G. Hartley 1962 (W--2262066). Lafayette Co.: P. K. Nelson s.n. [July 23, 1946] (Ws). Milwaukee Co.: Hasse s.n. [Milwaukee] (N); Lapham s.n. (Ws). Outagamie Co.: F. C. Seymour 10153 (Ws). Polk Co.: Mrs. C. F. Baker s.n. [C. F. Baker 10693] (Po--64652); Benner & Benner 105 (Ws); M. Johnson s.n. [Aug. 15, 1960] (Ws); R. W. Pohl 516 (Ws). Rock Co.: J. Wickham 16 (Ws). Saint Croix Co.: De Byle s.n. [12 Aug. 1952] (Ws). Sauk Co.: J. H. Zimmerman 1188 (Ws). Sheboygan Co.: Goessl s.n. [Aug. 1919] (Ws). Walworth Co.: Almon s.n. [July 23, 1926] (Ws). MINNESOTA: Beltrami Co.: Westley s.n. [Black Duck, Jul. 22, 1918] (Io--94363). Freeborn Co.: L. H. Pammel s.n. [VIII-28-'27] (Io--130033). Goodhue Co.: N. L. T. Nelson s.n. [Goodhue, Aug. 1899] (La, Ur); J. H. Sandberg s.n. [July 1886] (B). Hennepin Co.: G. B. Aiton 8467 (Po--64650); Cratty s.n. [Minneapolis, Aug. 1, 1924] (Io--115410); J. H. Sandberg 597 (Fc--2281), s.n. [July 1890] (Ca--25175, Ca--25176). Mower Co.: J. F. Brenckle 47-548 (N). Ramsey Co.: Mearns s.n. [Fort Snelling, Aug. 21, 1891] (W--670318), s.n. [Fort Snelling, Aug. 25, 1891] (W--670319). Rice Co.: G. K. Knight s.n. [Northfield, 8/11/33] (Bt--31377). Saint Louis Co.: G. N. Jones 18597 (Ur). Stearns Co.: Chandonnet s.n. [July 29, 1912] (Up--60543). NORTH DAKOTA: Ramsey Co.: Geyer 105 (W--71962). Ransom

Co.: Bergman 1077 (Cm). Richland Co.: W. B. Bell 242 (Ca--587764), 465 (Gu--21808); O. A. Stevens s.n. [Leonard, July 25, 1949] (W--2004204). Stutsman Co.: Lunell 869 (Ur), s.n. [Jamestown, Aug. 22, 1913] (N), s.n. [Jamestown, Aug. 24, 1913] (W--893166, W--893167). SOUTH DAKOTA: Bennett Co.: Visher 2263 (N). Clay Co.: Over 4037 (W--789742), s.n. [Aug. 5, 1915] (Se--14944). Minnehaha Co.: P. Johnson 33 (Bt--62601, Ky, Lb--36393, N, Ur). Roberts Co.: Over 14385 (W--1242263); L. H. Pammel s.n. [Sisseton, Aug. 10, '17] (Io--99477). Shannon Co.: Over 16175 (Gg--130641). KANSAS: Riley Co.: F. C. Gates 12775 (Ob--50849). MISSOURI: Greene Co.: P. C. Standley 9435 (W--688351). ARKANSAS: Newton Co.: Demaree 22240 (N, Z). Phillips Co.: Demaree 19745 (N, Sm). NEBRASKA: Cherry Co.: J. M. Bates s.n. [Valentine, Aug. 16, 1893] (Ur). Knox Co.: F. E. Clements 2743 (W--202568). Thomas Co.: Rydberg 1716 (N, W--210372). Washington Co.: Lallman s.n. [Aug. 26, 1926] (Bt--32236). OKLAHOMA: Canadian Co.: M. Hopkins 2099 (Ok). Cherokee Co.: E. L. Little 528 (Ok); Stratton 6592 (N); C. S. Wallis 928 (St). Cleveland Co.: W. S. Myers 5 (Ok). McCurtain Co.: Hopkins & Cross 2296 (Ok). Muskogee Co.: Waterfall 10150 (St). Oklahoma Co.: Stemen 334 (Ok); Waterfall 1773 (Ok, St). County undetermined: Flowers 46 (Ok); Waugh s.n. [Clarkson, 6/22/1893] (W--266934). TEXAS: Cass Co.: Whitehouse 17697 (Sm). CULTIVATED: Germany: Bouché s.n. (Gg--31435). Switzerland: Herb. Hort. Bot. Genev. s.n. [18 Aug. 1826] (W--264565). LOCALITY OF COLLECTION UNDETERMINED: Mackanness s.n. [eastern N. Y. and e. Pa., 1936--37] (T1). MOUNTED ILLUSTRATIONS: Perry & Fernald in Fernald, Rhodora 38: pl. 450, fig. 5--8. 1936 (N).

xVERBENA URUGUAYENSIS Moldenke, Castanea 13: 118, nom. nud. 1948; hybr. nov.

Synonymy: Verbena melindres x tenera Osten ex Moldenke, Résumé 369, in syn. 1959. Verbena peruviana (L.) Britton x V. tenera Spreng. ex Moldenke, Résumé 372, in syn. 1959. Verbena tenera Spreng. x V. peruviana (L.) Britton ex Moldenke, Résumé 376, in syn. 1959.

Bibliography: Moldenke, Castanea 13: 118. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 100 & 200. 1949; Moldenke, Résumé 120, 369, 372, 376, & 474. 1959; Moldenke, Phytologia 8: 121 (1961), 10: 289 (1964), and 11: 271 & 272. 1965.

Planta inter V. peruviana (L.) Britton et V. tenera Spreng. hybrida naturalis, aspectu foliorum florumque parentis intermedio.

This is the natural hybrid between V. peruviana (L.) Britton and V. tenera Spreng. which occurs where the ranges of these two species overlap in the states of Rio Grande do Sul and Santa Catarina, Brazil, in Uruguay, and in the provinces of Buenos Aires, Catamarca, Córdoba, Corrientes, La Rioja, Santa Fé, & Tucumán, Ar-

gentina.

Osten, in speaking of xV. trinitensis Moldenke, says: "Er entspricht ganz genau dem spontanen Bastard der Uruguay flora: Verbena [Nobiles, chamaedryf.] Melindres Gill. (rot) x [Glandularia, erinoides] 'tenera' Auct. (violett) (Briq. -- an Sprengel?) der ebenfalls rosa Blüten hat, dadurch wie obriger leicht unter den Eltern aufzufinden ist." The plant should have considerable horticultural merit.

xVERBENA VAGA Moldenke, Phytologia 5: 133. 1955.

Synonymy: Glandularia santiaguensis x megapotamica Schnack & Covas, Rev. Argent. Agronom. 12: 222, 224, & 228. 1945. Glandularia santiaguensis x megapotamica Covas & Schnack ex Moldenke, Phytologia 5: 133, in syn. 1955. Verbena megapotamica Spreng. x V. santiaguensis (Covas & Schnack) Moldenke, Résumé 369, in syn. 1959. Verbena santiaguensis (Covas & Schnack) Moldenke x V. megapotamica Spreng. ex Moldenke, Résumé 373, in syn. 1959.

Bibliography: Schnack & Covas, Revist. Argent. Agronom. 12: 222, 224, & 228. 1945; Schnack & Gonzalez, Revist. Argent. Agronom. 12: 285, 286, & 288--290, fig. 1 B, D, & E, & 3, pl. 15 A, B, & C. 1945; Moldenke, Phytologia 3: 468 (1951) and 5: 133. 1955; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Am. Midl. Nat. 59: 362-363. 1958; Moldenke, Résumé 225, 296, 369, 373, 420, 421, & 474. 1959; Moldenke, Résumé Suppl. 2: 13. 1960; Moldenke, Phytologia 8: 121. 1961; Moldenke, Résumé Suppl. 8: 2 & 3. 1964; Moldenke, Phytologia 10: 133 (1964) and 11: 135. 1964.

This is the natural hybrid between V. santiaguensis (Covas & Schnack) Moldenke and V. megapotamica Spreng. found originally among the parents in the Experimental Garden of the Escuela de Agronomía in Mendoza, Argentina, and also produced artificially by Schnack and Covas in Argentina. The two parental species grow together in Uruguay and the hybrid may be expected in the wild state there. They also grow in parts of Argentina, but I have not as yet seen any wild specimens of both from the same province of that country. The hybrid should offer considerable horticultural promise and deserves more experimental study.

Under xV. schnackii Moldenke, in these notes, it is stated that the two parental species have a relatively small affinity based on the evidence of the cytologic pattern and the completely sterile pollen. This shows a good correlation with the large morphological differences between the two parents.

Schnack & Covas (1945) say "Asi mismo hemos podido identificar en el jardín experimental de la Escuela de Agronomía de Mendoza el híbrido natural Glandularia santiaguensis x G. megapotamica; poseemos también otros híbridos naturales que aun no hemos estudiado."

VERBENA VALERIANOIDES H.B.K., Nov. Gen. & Sp. Pl. 2: 277. 1818
[not V. valerianoides St.-Hil., 1947].

Synonymy: Verbena valerianoides Humb. ex Spreng. in L., Syst. Veg., ed. 16, 2: 747. 1825. Verbena valerianoides Humb. & Bonpl. es Steud., Nom. Bot., ed. 2, 2: 751. 1841. Verbena valerianoides Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 600. 1843. Verbena valerianoides Kunth ex Schau. in A. DC., Prodr. 11: 542. 1847.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl. 2: 277. 1818; Steud., Nom. Bot., ed. 1, 874. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 747. 1825; Steud., Nom. Bot., ed. 2, 2: 751. 1841; D. Dietr., Syn. Pl. 3: 600. 1843; Walp., Repert. Bot. Syst. 4: 20. 1845; Benth., Pl. Hartw. 245. 1846; Schau. in A. DC., Prodr. 11: 542. 1847; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1180. 1895; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 102. 1942; Moldenke, Alph. List Invalid Names Suppl. 1: 27. 1947; Moldenke, Alph. List Cit. 2: 557 & 573 (1948) and 3: 696 & 805. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 62 & 200. 1949; Moldenke, Résumé 69 & 474. 1959; Moldenke, Résumé Suppl. 4: 20 (1962) and 6: 5. 1963; Moldenke, Phytologia 9: 97 & 114. 1963; Moldenke, Résumé Suppl. 8: 6. 1964.

Glabrous herb, often tall and weak; stems erect, tetragonal; branches erect; leaves decussate-opposite, sessile, linear, about 3 cm. long and 4 mm. wide, rather acute at the apex, entire, revolute-margined, rigid, venose, with a few scattered hairs above; inflorescence terminal, pedunculate, ternate and 3-spiked; spikes cylindric, very dense, 0.8--1.6 cm. long; peduncles abbreviated; bractlets ovate, acute at the apex, about half as long as the calyx; flowers small; calyx short-tubular, about 3 mm. long, strigillose-scabrous, the rim mucronate-5-dentate; corolla small, varying from light-blue, blue, or blue-violet to lavender-blue or violet, slightly surpassing the calyx-tube.

The type of this rather distinctive species was collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland "in frigidis Andium prope Santa Fé de Bogota et Chipo, alt. 1370 hex.", Cundinamarca, Colombia, deposited in the herbarium of the Botanisches Museum at Berlin, photographed there by Macbride as his type photograph no. 39476, but now destroyed. Schauer (1847) cites also Hartweg 1350 from "In Andibus Columbiae" in the same herbarium. He says "Proxima et persimilis praecedenti [V. litoralis H.B.K.] tamen uti videtur foliis integerrimis calyceque longiore satis distincta." Walpers (1845) places the species in his Section Verbenaca, Subsection Inermes, Group Foliosae, Subgroup Micranthae, and Secondary Subgroup Holophyllae, with 22 other species. The original authors comment "Habitu Valerianis nonnullis valde accedens."

It has been found in wet fields, fields at the base of hills, and along streams, at altitudes of 2600 to 3250 meters, flowering in May, August, October, and November. Schneider found it "very abundant in moist meadows and brook margins", Langenheim calls it "common in marshes", while Barclay & Juajibioy describe it as "growing up through shrubs at edge of small stream in great stretches of open paramo with dried slopes and wet flats."